

## REMARKS

### Claim Rejections 35 U.S.C. § 102 (e)

#### Claims 26-28

The Examiner has rejected claims 26-28 under 35 U.S.C. § 102 (e) as being anticipated by Wong (US 6,577,017).

Applicant respectfully disagrees with the Examiner. Applicant has amended claim 26. Claim 26, as amended, claims a device having I/O connections to a package or board comprising: a bond pad, the bond pad having two or more segments, and a wire lead attached directly to the segments. See lines 11-15 on page 10 of the specification.

In contrast, the Wong reference cited by the Examiner teaches a bond pad structure (20) that includes a first metal plate (24) and a second metal plate (28), with a bond wire (30) that is attached directly to the second metal plate, but that is not attached directly to the first metal plate. See Figure 3. Also, see Col. 1, lines 36-43.

Thus, the Wong reference cited by the Examiner does not teach each and every element of Applicant's invention, as claimed in claim 26, as amended. Consequently, Wong does not anticipate claim 26, as amended, of Applicant's invention.

Claims 27 and 28 are dependent on claim 26, as amended and, thus, are also not anticipated by Wong.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 26-28 under 35 U.S.C. § 102 (e).

### **Claims 1, 3, 5, 6, and 10**

The Examiner has rejected claims 1, 3, 5, 6, and 10 under 35 U.S.C. § 102 (e) as being anticipated by Wark et al. (US 6,613,662).

Applicant respectfully disagrees with the Examiner. Applicant has amended claim 1. Claim 1, as amended, claims a device having Input/Output (I/O) connections to a package or board comprising: a bond pad (21B); vias (22N, 22N) located over the bond pad; a BLM (24) located over the vias, the BLM split into two or more segments (24N, 24N), the segments in close proximity to each other, the segments separated by a gap (23); and a bump (25) located over the segments. See Figures 2a-2b. Also, see lines 17-31 on page 6 and lines 1-4 on page 7 of the specification.

In contrast, the Wark et al. reference cited by the Examiner teaches a contact structure (70) with a contact pad (92), blade-like projections (80, 82, 84, 86) located over the contact pad, the blade-like projections in close proximity to each other, the blade-like projections separated by corner gaps (74, 76, 78, 72); and a solder ball (88) located over the blade-like projections. See Figures 3A-3B. Also, see Col. 8, lines 30-43.

However, the Wark et al. reference does not teach any vias located between the contact pad and the blade-like projections. Thus, the Wark et al. reference cited by the Examiner does not teach each and every element of Applicant's invention, as claimed in claim 1, as amended. Consequently, Wark et al. does not anticipate claim 1, as amended, of Applicant's invention.

Claims 3, 5, 6, and 10 are dependent on claim 1 and, thus, are also not anticipated by Wark et al.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 1, 3, 5, 6, and 10 under 35 U.S.C. § 102 (e).

**Claim Rejections 35 U.S.C. § 103 (a)**

**Claims 11-15**

The Examiner has rejected claims 11-15 under 35 U.S.C. §103 (a) as being unpatentable over Wark et al. (US 6,613,662) and Wong (US 6,577,017).

Applicant respectfully disagrees with the Examiner. Applicant has amended claim 11. Claim 11, as amended, of Applicant's claimed invention claims the device of claim 1, as amended, wherein each of the segments (44N) of the BLM is electrically connected to two or more of the vias (42N). See Figure 4. Also, see lines 10-12 on page 7 of the specification.

Claim 1, as amended, claims a device having Input/Output (I/O) connections to a package or board comprising: a bond pad (41B); vias (42N) located over the bond pad; a BLM located over the vias, the BLM split into two or more segments (44N), the segments in close proximity to each other, the segments separated by a gap; and a bump (45) located over the segments. See Figure 4.

Wark et al. teaches a bump but does not teach any vias. Wong teaches a single via, but does not teach a bump. Thus, a combination of Wark et al. and Wong would not produce Applicant's invention, as claimed in claim 11, as amended. Consequently, Applicant's invention, as claimed in claim 11, as amended, would not have been obvious to one of ordinary skill in the art of semiconductor packaging at the time the invention was made.

Claims 12-15 are dependent on claim 11, as amended and would also not have been obvious to one of ordinary skill in the art of semiconductor packaging at the time the invention was made.

Since the two references cited by the Examiner do not teach, suggest, or render obvious claims 11-15 of Applicant's claimed invention, Applicant respectfully

requests the Examiner to withdraw the rejection to claims 11-15 under 35 U.S.C. §103 (a).

### Claims 2 and 4

The Examiner has rejected claims 2 and 4 under 35 U.S.C. §103 (a) as being unpatentable over Wark et al. (US 6,613,662) and Tadauchi et al. (US 6,464,122).

Applicant respectfully disagrees with the Examiner. Claim 2 of Applicant's claimed invention claims the device of claim 1, as amended, wherein the bump (25) comprises a Lead-Tin (Pb-Sn) solder.

Claim 1, as amended, claims a device having Input/Output (I/O) connections to a package or board comprising: a bond pad (21B); vias (22N, 22N) located over the bond pad; a BLM (24) located over the vias, the BLM split into two or more segments (24N, 24N), the segments in close proximity to each other, the segments separated by a gap (23); and a bump (25) located over the segments. See Figures 2a-2b. Also, see lines 17-31 on page 6 and lines 1-4 on page 7 of the specification.

Wark et al. teaches a bump but does not teach any vias. Tadauchi et al. teaches a solder containing lead. See Col. 9, line 51. Thus, a combination of Wark et al. and Tadauchi et al. would still not produce Applicant's invention, as claimed in claim 11, as amended. Consequently, Applicant's invention, as claimed in claim 2 would not have been obvious to one of ordinary skill in the art of semiconductor packaging at the time the invention was made.

Claim 4 of Applicant's claimed invention claims the device of claim 1, as amended, wherein the bump (25) comprises a Tin-Silver-Copper (Sn-Ag-Cu) ternary alloy.

Claim 1, as amended, claims a device having Input/Output (I/O) connections to a package or board comprising: a bond pad (21B); vias (22N, 22N) located over the bond pad; a BLM (24) located over the vias, the BLM split into two or more

segments (24N, 24N), the segments in close proximity to each other, the segments separated by a gap (23); and a bump (25) located over the segments. See Figures 2a-2b. Also, see lines 17-31 on page 6 and lines 1-4 on page 7 of the specification.

Wark et al. teaches a bump but does not teach any vias. Tadauchi et al. teaches a tin-silver-copper solder. See Col. 9, lines 49-50. Thus, a combination of Wark et al. and Tadauchi et al. would still not produce Applicant's invention, as claimed in claim 4. Consequently, Applicant's invention, as claimed in claim 4 would not have been obvious to one of ordinary skill in the art of semiconductor packaging at the time the invention was made.

Since the two references cited by the Examiner do not teach, suggest, or render obvious claims 2 and 4 of Applicant's claimed invention, Applicant respectfully requests the Examiner to withdraw the rejection to claims 2 and 4 under 35 U.S.C. §103 (a).

#### Claims 7-9

The Examiner has rejected claims 7 and 9 under 35 U.S.C. §103 (a) as being unpatentable over Wark et al. (US 6,613,662) and the admitted Prior Art Figure 1.

Applicant respectfully disagrees with the Examiner. Claim 7 of Applicant's claimed invention claims the device of claim 1, as amended, wherein the BLM (24) comprises a lower layer (24A) and an upper layer (24B). See Figure 2b.

Claim 1, as amended, claims a device having Input/Output (I/O) connections to a package or board comprising: a bond pad (21B); vias (22N, 22N) located over the bond pad; a BLM (24) located over the vias, the BLM split into two or more segments (24N, 24N), the segments in close proximity to each other, the segments separated by a gap (23); and a bump (25) located over the segments. See Figures 2a-2b. Also, see lines 17-31 on page 6 and lines 1-4 on page 7 of the specification.

Wark et al. teaches a bump but does not teach any vias. In the opinion of the Examiner, the admitted prior art Figure 1b teaches a BLM with two layers (14A, 14B). Thus, a combination of Wark et al. and the admitted Prior Art Figure 1 would still not produce Applicant's invention, as claimed in claim 7. Consequently, Applicant's invention, as claimed in claim 7, would not have been obvious to one of ordinary skill in the art of semiconductor packaging at the time the invention was made.

Claim 8 of Applicant's claimed invention claims the device of claim 7 wherein the lower layer comprises Titanium (Ti) with a thickness of about 200 to 1500 Angstroms.

Wark et al. teaches a bump but does not teach any vias. In the opinion of the Examiner, the admitted prior art Figure 1b teaches a BLM with two layers (14A, 14B). Thus, a combination of Wark et al. and the admitted Prior Art Figure 1 would still not produce Applicant's invention, as claimed in claim 8. Consequently, Applicant's invention, as claimed in claim 8, would not have been obvious to one of ordinary skill in the art of semiconductor packaging at the time the invention was made.

Claim 9 of Applicant's claimed invention claims the device of claim 7 wherein the upper layer (24B) comprises Nickel-Vanadium (Ni-V) with a thickness of about 1000 to 8000 Angstroms.

Wark et al. teaches a bump but does not teach any vias. In the opinion of the Examiner, the admitted prior art Figure 1b teaches a BLM with two layers (14A, 14B). Thus, a combination of Wark et al. and the admitted Prior Art Figure 1 would still not produce Applicant's invention, as claimed in claim 9. Consequently, Applicant's invention, as claimed in claim 9, would not have been obvious to one of ordinary skill in the art of semiconductor packaging at the time the invention was made.

Since the two references cited by the Examiner do not teach, suggest, or render obvious claims 7-9 of Applicant's claimed invention, Applicant respectfully

requests the Examiner to withdraw the rejection to claims 7-9 under 35 U.S.C. §103 (a).

**Conclusion**

Applicant believes that all claims pending are now in condition for allowance so such action is earnestly solicited at the earliest possible date.

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of this application, the Examiner is invited to contact the undersigned at (408) 720-8300.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

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